TASK 3: ASSESSMENT COMMENTARY

Respond to the prompts below (**no more than 10 single-spaced pages, including prompts**) by typing your responses within the brackets following each prompt. Do not delete or alter the prompts. Commentary pages exceeding the maximum will not be scored. Attach the assessment you used to evaluate student performance (**no more than 5 additional pages**) to the end of this file. If you submit feedback as a video or audio clip and your comments to focus students cannot be clearly heard, attach transcriptions of your comments (**no more than 2 additional pages**) to the end of this file. These pages do not count toward your page total.

1. Analyzing Student Learning

a. Identify the specific learning objectives measured by the assessment you chose for analysis.

[The specific learning objections to be met in Lesson 2, and measured by the Lesson 2 assessment are as follows:

* Students will be able to explain why some fluids flow more easily than others.
* Students will infer what factors determine viscosity of substances, including magma.
* Students will describe a fluid as having “high” or “low” viscosity.

These objectives were created to meet Next Generation Science Standards MS-ESS2-1 and MS-ESS3-1, including the cross-cutting concepts and science and engineering practices connected to those standards.]

b. Provide a graphic (table or chart) or narrative that summarizes student learning for your whole class. Be sure to summarize student learning for all evaluation criteria submitted in Assessment Task 3, Part D.

[For this assessment, students submitted a completed laboratory investigation, where they wrote down observations from the lab, and answered a series of questions related to the lab. The handout and expectations were introduced before students began the laboratory investigation. There isn’t a large point system for assessments in this classroom, as exams are usually worth between 30 and 40 points, large projects are scored on a 50 point scale, and day-to-day assessments, including reading and writing activities, and laboratory exercises range from 10-20 points. Due to the short class period, and the nature of the lab, each of the 10 lab questions were worth one point, and the observations were worth two points, making this assessment worth total of 12 class points. A table that summarizes the whole class is shown below. The average class score was 9.5/12, or about an 80%, which meets expectations.

	Observations 2 pts	Q 1 1 pt	Q 2 1pt	Q 3 1 pt	Q 4 1 pt	Q 5 1 pt	Q 6 1 pt	Q 7 1 pt	Q8 1 pt	Q 9 1 pt	Q 10 1pt	Total /12
Student 1	2	1	1	1	1	1	0	0	0	0	0	7
Student 2	2	1	1	1	1	1	.5	0	.5	.5	.5	9
Student 3	1	1	1	1	1	0	0	0	0	0	0	5
Student 4	2	1	1	1	1	1	1	1	0	0	0	9
Student 5	2	1	1	1	0	.5	1	0	0	1	1	8.5
Student 6	2	1	1	1	1	1	1	1	1	1	1	12
Student 7	2	1	1	1	1	1	1	1	1	1	1	12
Student 8	X	X	X	X	X	X	X	X	X	X	X	X
Student 9	X	X	X	X	X	X	X	X	X	X	X	X
Student 10	2	1	1	1	1	1	1	1	1	1	1	12
Student 11	X	X	X	X	X	X	X	X	X	X	X	X
Student 12	2	1	1	1	1	1	1	.5	1	1	1	11.5
Student 13	2	1	1	1	1	1	.5	.5	.5	1	1	10.5
Student 14	2	1	1	1	1	1	1	1	1	1	1	12
Student 15	M	M	M	M	M	M	M	M	M	M	M	M
Student 16	2	1	1	1	1	1	1	1	1	1	1	12
Student 17	2	1	0	1	0	1	1	1	1	1	1	10
Student 18	2	1	1	1	1	1	1	1	1	1	1	12
Student 19	2	1	1	1	1	1	1	1	1	1	1	12
Average	**1.93**	**1**	**.93**	**1**	**.86**	**.9**	**.93**	**.67**	**.67**	**.76**	**.76**	**9.5**

- X denotes the student was absent and missed the lab
- M denotes the student was present, but the lab report is missing

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c. Use evidence found in the **3 student work samples and the whole class summary** to analyze the patterns of learning **for the whole class** and differences for groups or individual learners relative to
   - conceptual understanding,
   - use of scientific practices during inquiry, **AND**
   - development of an evidence-based explanation or reasonable prediction about a real-world phenomenon.

Consider what students understand and do well, and where they continue to struggle (e.g., common errors, confusions, need for greater challenge).

[The whole class summary gives evidence that students struggled the most on questions 7 and 8 on the assessment. This was also made evident, as students tended to ask for help with these questions during the lab. These questions required more higher order thinking skills, and asked the students to make connections using the evidence they gathered in the laboratory exercise to develop an explanation about what happens inside a volcano. These questions required a conceptual understanding of the processes that cause different types of volcanic eruptions, and how viscosity of magma influences that. Students used scientific practices in the lab, and inquiry skills to relate the lab to a real –world phenomenon to thoroughly answer the questions. When students asked for help with these two questions, I guided them to an understanding of what I was looking for by walking them through what they observed in the laboratory exercise, and through questioning I tried to guide them to the answer. I asked them what they observed when they attempted to blow bubbles in the thicker fluid. Most concluded that they had to blow harder into the thicker fluid, which resulted in one big bubble. At this point, many student groups were able to grasp the concept and make the connections needed to answer the question. If students were still struggling, I then guided them to think about his in terms of volcanic activity, and if the magma was thicker, would gases be able to easily escape or would it take more gas and pressure to escape?

The students with more advanced learning capabilities didn't have many problems developing explanations based on evidence from the lab, and they developed a strong conceptual understanding of viscosity as related to volcanic activity, which was made evident by the assessment. Seven of the fifteen assessments had correct answers on every question. Student A's work sample shows a more advanced understanding of the concepts. Student A was able to develop evidence-based explanations, relating what was observed and what really happens with difference viscosities of magma inside the Earth. Where student A struggled was with provided more thorough explanations. Student A had the right ideas, and correct understandings, but lacked in some areas of explanation. This did not give any reason to lose points, though.

The students who tend to score average on assessments did have struggles with questions 7 and 8, but they were more likely to ask for help to develop a better understanding. They also proved to struggle in developing a strong understanding of the idea of viscosity, and seemed to frequently flip-flop what it means to have a high viscosity and a low viscosity. Student B provides an example of confusing high viscosity and low viscosity with incorrect answers on questions 2 and 5, and also shows a struggle with truly understanding the meaning of viscosity, as is evident with question 4. Where Student B didn't struggle was with questions 7 and 8, where more inquiry skills were needed. Student B did ask for guidance with these questions, but

quickly developed an understanding and was able to relate what was observed in the activity to what was being asked in the question. Student B was able to take the guidance to answer question 7, and correctly answer questions 8, 9, and 10.

Students on IEP and 504 plans struggled the most on the questions that required more conceptual understanding, and asked for more thorough answers. The observations noted by these students as a whole were not as in-depth and some of the observations other students were making during the lab. The answers following the lab were also more simplistic, and sometimes the students only gave one-word answers. Student C is on an IEP. Student C requires more clarification of instruction, and also needs to verbalize thoughts and ideas before writing. Student C is given the option to use word processing. In this situation, Student C did not want to use the computer to complete the questions. I checked in on Student C frequently, and placed Student C with a higher achieving student for more clarification when doing the lab and answering the questions. Working with a partner also gave Student C the opportunity to verbalize the answers before writing them. When I visited Student C to check on understanding and provide clarification, Student C did not voice any concern about the task at hand. Student C seemed to have a general understating of the concept of viscosity, but did not use the term in answers. Instead, the answers used simpler terms like slower and faster, which seemed to be a pattern amongst students on IEPs. On the questions that had a two-part answer and asked for an explanation, only one answer was given with no explanation. This was also a pattern amongst most students with IEPs. Student C did not ask for clarification on questions that asked for an explanation, and some of the questions may have been misread by Student C, like questions 7 and 8.]

d. If a video or audio work sample occurs in a group context (e.g., discussion), provide the name of the clip and clearly describe how the scorer can identify the focus student(s) (e.g., position, physical description) whose work is portrayed.

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2. Feedback to Guide Further Learning

Refer to specific evidence of submitted feedback to support your explanations.

a. Identify the format in which you submitted your evidence of feedback for the 3 focus students. **(Delete choices that do not apply.)**

- Written directly on work samples or in separate documents that were provided to the focus students

[Feedback was written directly on the students' work samples.]

b. Explain how feedback provided to the 3 focus students addresses their individual strengths and needs relative to the learning objectives measured.

[Student A expressed a strong understanding of viscosity of different substances. In the feedback for Student A, I made sure to highlight key words that were used in the answers that demonstrated this strong understanding. I gave Student A plenty of positive feedback, and made sure to note the strong conceptual understanding that was demonstrated. On question 6, I made note that one part of the answer was missing, but it was already answered earlier in question 4. The student failed to make the connection between the two questions, so it was important for me to note that connection was missed. The student provided a general understanding in the answers for questions 7 and 8. More detail could have been provided, but no points were lost. I made note of points that would have made the answers stronger, and

asked a question in my feedback for number 8 to allow Student A to use more critical thinking as related to the objectives.

Student B could have made better observations in the laboratory exercise. I made note that more detailed observations would have been appreciated. At this age, students are still learning science process skills, and making a note so the student knows how to improve upon observations skills will be helpful for future exercises that require these types skills. Student B struggled to fully understand the idea of viscosity, and what it means to have a high or low viscosity. On question 2, I made a note that clarifies what it means to have a higher or lower viscosity. On question 4, the student provided more of a definition of viscosity instead of the factors that affect viscosity. The feedback for this question provides the correct answer, and clarifies any confusion the student had. Because of the confusion the student had about high and low viscosity, the answers for question 5 were flip-flopped. Clarifying the answer in question 2 with feedback, also applies to question 5. Student B started making more correct connections as more questions were answered. Although question 6 and question 4 were related, the student had more of an understanding of question 6. It may have been the way it was worded that made more sense to the student, or the more the student revisited the ideas from the lab, the more the concepts made sense. Student B did ask for clarification for question 7, and the answer provided by Student B shows that the clarification allowed the student to develop a stronger conceptual understanding of the ideas as related to the activity.

In the feedback for Student C, I provided a lot more clarification, and tried to use simpler terms to meet Student C's accommodations. I looked for a general understanding in the answers from Student C, and highlighted terms that showed me this, like Thicker, thinner, faster, slower and anything that showed an understanding of temperature and its role in viscosity. I also used positive reinforcement in my feedback for Student C. In question 6 and 7, the student did not provide an explanation, so my feedback explains what the question was asking and what it was looking for in the answer. I also tried to related what happened in the activity to help the student understand he reason for the answer, like in question 10.]

c. Describe how you will support each focus student to understand and use this feedback to further their learning related to learning objectives, either within the learning segment or at a later time.

[The feedback for each focus student was detailed in areas where the student may have needed more clarification to develop an understanding as related to the learning objectives. After the assessments were handed back to the students, the answers were discussed and clarified as a class. This gave the students an opportunity to see where they had a strong understanding, and where there was possible confusion. It also allowed for students to understand my feedback, and where I was coming from and what I was looking for in the answers. Discussing the answers also gave a stronger connection to the lab activity as related to the objectives.

I also wanted to emphasize that answering the entire question that is being asked is important to understanding the concepts. During our discussion I let the students know that when there is confusion with any of the questions, that asking for help and clarification is important to their success and overall understanding.]

3. Evidence of Language Understanding and Use

When responding to the prompt below, use concrete examples from the video clips and/or student work samples as evidence. Evidence from the clips may focus on one or more students.

You may provide evidence of students' language use **from ONE, TWO, OR ALL THREE of the following sources:**

1. Use video clips from Instruction Task 2 and provide time-stamp references for evidence of language use.
2. Submit an additional video file named "Language Use" of no more than 5 minutes in length and cite language use (this can be footage of one or more students' language use). Submit the clip in Assessment Task 3, Part B.
3. Use the student work samples analyzed in Assessment Task 3 and cite language use.

a. Explain and provide concrete examples for the extent to which your students were able to use or struggled to use the

- selected language function,
- vocabulary and/or symbols, **AND**
- syntax or discourse

to develop context understandings.

[In Lesson 2, students were introduced to the word viscosity and it's definition. In the introduction, the term was used to describe various common household items, and then it was used in relation to Earth's geoscience processes. The objectives for this lesson all centered around understanding the term viscosity and it's relation to unit on Earth's processes. Student A used the term viscosity correctly throughout the assessment. This demonstrates comprehension of the vocabulary, and ability to use it correctly as syntax in answers to the questions.

A common struggle with the language and vocabulary was demonstrated by Student B. Student B struggled with developing a correct understanding of high and low viscosity, as well as what influences different viscosities. The student did use the vocabulary as syntax once in the written answers, and as the student completed the assessment, more understanding of the language seemed to develop.

Student C demonstrated a basic comprehension of the language, but did not gain a deep enough understanding of the vocabulary to use it as syntax in the written answers. Student C used simpler language to answer some of the questions, and seemed to understand the definition of viscosity, but did not have the skills to use the vocabulary in the assessment. Student C instead used terms such as faster, slower, thinner, thicker, sticky, hotter, and cooler to demonstrate understanding.]

4. Using Assessment to Inform Instruction

a. Based on your analysis of student learning presented in prompts 1b–c, describe next steps for instruction:

- For the whole class
- For the 3 focus students and other individuals/groups with specific needs

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs or 504 plans, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students needing greater support or challenge).

[From the analysis of the laboratory investigation, I concluded that a few areas needed to be reinforced before we could move on and build on this content. Some students struggled in areas that related viscosity to real-world processes where viscosity influences magma, and volcanic eruptions. Students commonly felt that if magma is thick, then it must be less dangerous because thick means slow. It was important to make sure they understood the idea that the thicker the magma, more force would be needed to push it up and out, just like having to blow harder in the nacho cheese to get a bubble. Many understood that thinner magma would flow faster, but clarification was needed for the students to understand that it does not take much force to push the thinner magma up and out, just like blowing lightly in the oil made for many bubbles. I used real-world examples like the lava flows in Hawaii, and the eruption at Mount St. Helens to reinforce these ideas during the discussion after the labs were handed back.

Moving forward, the idea of viscosity will be revisited multiple times. The term will be used when discussing volcanic rocks and landforms, and different types of volcanoes and eruptions. Bringing up the experience the students had with the hands-on activity will help to reinforce, and scaffold these ideas.

For Student C, and other individuals that struggle with the complexity of the language and the concept, any time this term is revisited, the definition will also be revisited so the students begin to comprehend the use of the term in discourse, and how it relates to the objectives being taught. It is also important for me to continue to clarify what it means to have high and low viscosity, so the students that had those mixed up , like Student B, can overcome their own misconceptions as it relates to the ideas of high and low viscosity.

Asking strategic questions that relate the content moving forward to the concepts we have already visited gives opportunities for higher achieving students to use higher order thinking skills to contribute answers to class discussions, and challenges them to think about the concepts on a deeper level.]

b. Explain how these next steps follow from your analysis of student learning. Support your explanation with principles from research and/or theory.

[My analysis of student learning provided me with details of where students struggle with not only the concepts being covered, but with their science process skills in general. I took into consideration everything I learned from the assessment. The table revealed where students struggled the most with the questions following the lab, which is how I determined which areas needed the most reinforcement prior to moving on, and in future lessons where these objectives are revisited.

Students struggled the most with using the more advanced inquiry skills to relate the model that was used in the lab to the actual real-world phenomenon. Reviewing the lab helps students build those connections between the exercise and the questions that were asked, and revisiting the experience in later lessons helps with the deeper understanding and the scaffolding of the information. Choosing to use nacho cheese in the lab (so the students could eat it afterwards) made the experience more memorable for many of the students. This gives the students a positive memory to think back on when the knowledge gained from the lab is revisited in later lessons. This all goes back to the concept of scaffolding, or building on the students prior

knowledge and experiences. Students can relate old situations to new information, especially if the task has a positive, memorable experience attached to it (Scaffolding in the Classroom, http://www.learnnc.org/lp/pages/5074). The lab also provided a model that was tangible and relatable, to a bigger concept that is difficult to see in real life.]